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ABSTRACTS BOOK

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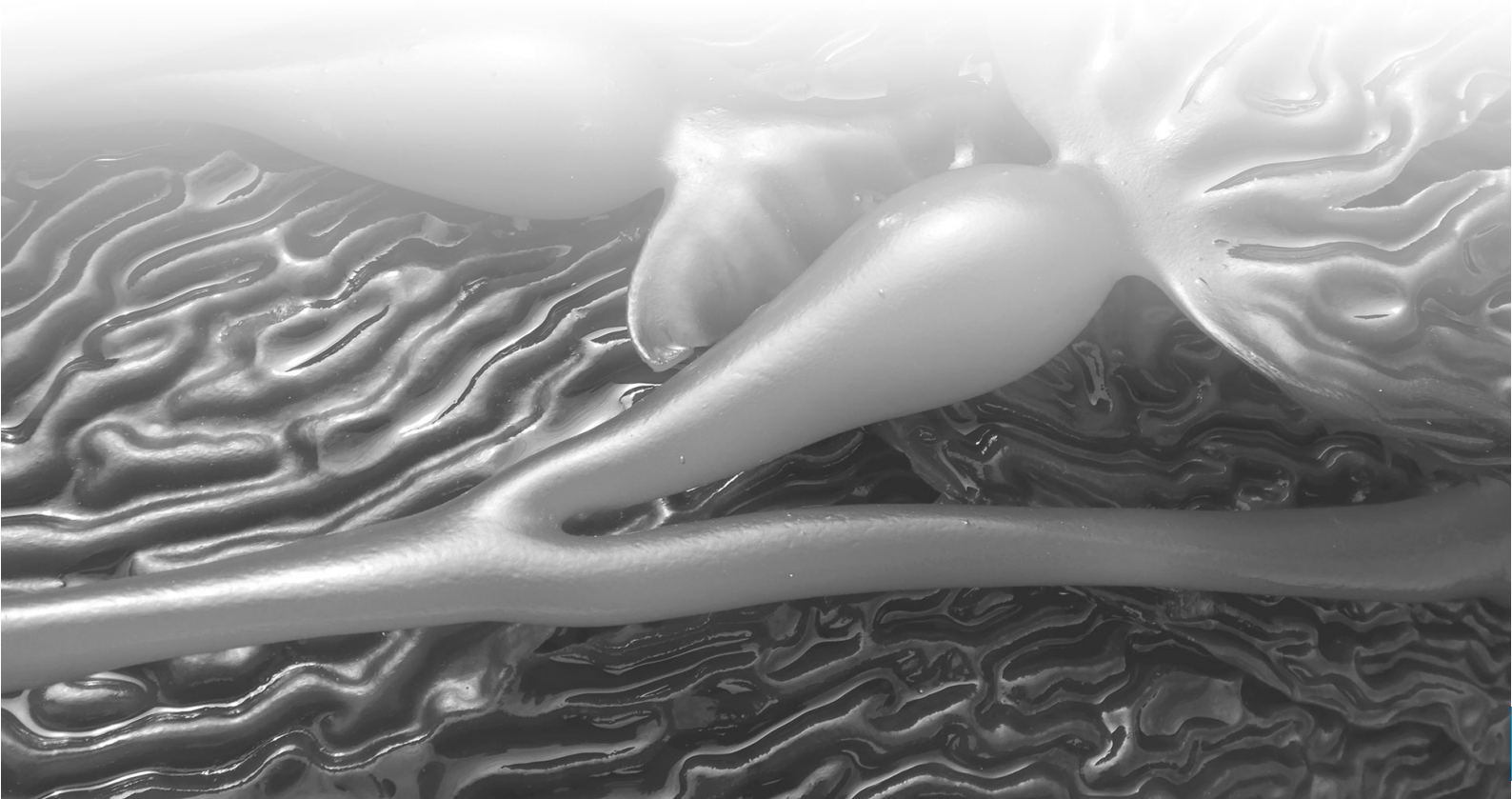

SYM09: A future for algal taxonomy: challenges and prospects

Keynote lecture

MOLECULAR TAXONOMY AND PHYLOGENOMICS OF CERAMIALES (RHODOPHYTA) HIGHLIGHT CHALLENGES AND ADVANCES IN UNDERSTANDING THE DIVERSITY AND SYSTEMATICS OF ALGAL TURFS

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Algal turfs are ecosystem engineers receiving growing attention in relation to their expansion on temperate reefs as a consequence of global change. However, their species diversity and taxonomy are still poorly understood. Turfs are composed of densely entangled small seaweeds, in which the red algal order Ceramiales is commonly a major component. The advent of classical molecular taxonomy and -omic approaches has revolutionized investigations of seaweed diversity and systematics. These approaches have been applied to the study of the Ceramiales, facilitating the discovery of new species and resolving classification issues. A molecular diversity survey using the rbcL gene and involving the study of ca. 400 specimens of turf-forming *rhodomelacean* species in Macaronesia detected impressive amounts of newly discovered diversity. A total of 67 species were identified, of which half corresponded to undescribed species presumably endemic to this bioregion. Likewise, the application of molecular species delimitation methods to widely distributed records of *Polysiphonia scopulorum* (>150 samples collected in Australia, South Africa, southern Europe and Macaronesia) revealed that it is a complex in which 13 species were resolved. These 13 cryptic species range from endemics with narrow known distributions to a species found in all studied regions. At taxonomic levels above species, the use of plastid phylogenomics has produced well-resolved phylogenies that have been applied to the resolution of classification issues in the Ceramiales. These studies illustrate how classical and newer evolving molecular techniques facilitate the understanding of seaweed diversity and systematics, and provide new insights into the complexity of turf assemblages.
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